

## CLAIMS

1. A mask for depositing and distributing reagents on an analytical support for biological samples, comprising:

- a lower surface and an upper surface that are at least partially mutually parallel, separated by a distance constituting the thickness of the mask;
- one or more delimited zones (lanes) located on the level of the lower surface of the mask and comprising an element (32) that projects (projecting element) from the lower surface of the mask, each projecting element comprising a portion constituting a slope with respect to a horizontal plane;
- associated with each lane, an opening traversing the mask over the whole of its thickness from an upper orifice (36) on the upper surface of the mask to a lower orifice (34), said lower orifice being located in the lane in the proximity of the lowest point of the slope of the lane;

the mask being such that the lane or lanes it comprises can hold reagents loaded into each opening and deposited on the analytical support by capillary action between the lane and the surface of the analytical support facing which the mask is to be placed.

2. A mask according to claim 1, suitable for distributing reagents on an analytical support for biological samples, comprising:

- a lower surface and an upper surface that are at least partially mutually parallel, separated by a distance constituting the thickness of the mask;
- one or more lanes each comprising a projecting element (32) of elongate shape emerging beneath the lower surface of the mask, said projecting element comprising a portion constituting a slope with respect to a horizontal plane;
- associated with each lane, an opening traversing the mask over the whole of its thickness from an upper orifice (36) on the upper surface of the mask to a lower

orifice (34), said lower orifice being located in the lane in the proximity of the lowest point of the slope of the lane;

the mask being such that the lane or lanes it comprises can hold reagents loaded into each opening and deposited on the analytical support by capillary action between the lane and the surface of the analytical support facing which the mask is to be placed.

3. A mask according to claim 1, suitable for distributing reagents on an analytical support for biological samples, comprising:

- a lower surface and an upper surface that are at least partially mutually parallel, separated by a distance constituting the thickness of the mask;
- one or more lanes each comprising a projecting element (32) emerging beneath the lower surface of the mask, constituted by a protuberance in the shape of a truncated parallelepiped, said projecting element comprising a portion constituting a slope with respect to a horizontal plane;
- associated with each lane, an opening traversing the mask over the whole of its thickness from an upper orifice (36) on the upper surface of the mask to a lower orifice (34), said lower orifice being located in the lane in the proximity of the lowest point of the slope of the lane;

the mask being such that the lane or lanes it comprises can hold reagents loaded into each opening and deposited on the analytical support by capillary action between the lane and the surface of the analytical support facing which the mask is to be placed.

4. A mask suitable for depositing and distributing reagents on an analytical support for biological samples, comprising:

- a lower surface and an upper surface that are at least partially mutually parallel, separated by a distance constituting the thickness of the mask;
- one or more delimited zones (lanes) located in the lower surface of the mask and comprising an element (32) that projects (projecting element) from the lower surface

of the mask, each projecting element comprising a lower surface and an upper surface that are mutually parallel and parallel to the lower and upper surface of the mask;

- associated with each lane, an opening traversing the mask over the whole of its thickness from an upper orifice (36) on the upper surface of the mask to a lower orifice (34), said lower orifice being located in the lane in the proximity of the lowest point of the slope of the lane, produced by inclining the mask with respect to the analytical support in the position of use;

the mask being such that the lane or lanes it comprises can hold reagents loaded into each opening and deposited on the analytical support by capillary action between the lane and the surface of the analytical support facing which the mask is to be placed.

5. A mask according to claim 1, characterized in that it is rigid or stiffened.
6. A mask according to claim 4, characterized in that it is rigid or stiffened.
7. A mask according to claim 1, in which the volume of the opening is such that it can constitute a reservoir for the loaded reagents.
8. A mask according to claim 4, in which the volume of the opening is such that it can constitute a reservoir for the loaded reagents.
9. A mask according to claim 1, in which the opening for each lane traverses the thickness of the mask including the thickness of the projecting element (32) in a perpendicular manner, the opening comprising a portion in the shape of a truncated cone (38) terminated by a lower orifice (34) that is cylindrical in shape.
10. A mask according to claim 4, in which the volume of the opening is such that it can constitute a reservoir for the loaded reagents.
11. A mask according to claim 1, comprising a plurality of mutually parallel lanes, distributed over the length of the mask.
12. A mask according to claim 4, comprising a plurality of mutually parallel lanes, distributed over the length of the mask.

13. A mask according to claim 11, comprising:

- a first series of mutually parallel lanes disposed in a first alignment;
- a second series of mutually parallel lanes that are parallel to the lanes of the first series, and forming a second alignment offset with respect to the first alignment.

14. A mask according to claim 12, comprising:

- a first series of mutually parallel lanes disposed in a first alignment;
- a second series of mutually parallel lanes that are parallel to the lanes of the first series, and forming a second alignment offset with respect to the first alignment.

15. A mask according to claim 1, in which the length of the slope of each lane coincides with the length of that lane.

16. A mask according to claim 4, in which the length of the slope of each lane extends over the length of that lane.

17. A mask according to claim 1, for depositing each reagent in a quantity equal to or in the range 4 to 15  $\mu\text{l}$  in each opening of the mask and holding said reagents between the lanes of the mask and the analytical support by capillary action, when the mask is brought to a distance from the analytical support of 2 mm or less from the point of the mask that is furthest from the analytical support and to a distance from the analytical support equal to or in the range 0.1 to 0.5 mm from the point of the mask that is closest to the analytical support.

18. A mask according to claim 4, for depositing each reagent in a quantity equal to or in the range 4 to 15  $\mu\text{l}$  in each opening of the mask and holding said reagents between the lanes of the mask and the analytical support by capillary action, when the mask is brought to a distance from the analytical support of 2 mm or less from the point of the mask that is furthest from the analytical support and to a distance from the analytical support equal to or in the range 0.1 to 0.5 mm from the point of the mask that is closest to the analytical support.

19. A mask according to claim 1, in which the lanes are separated from each other by a distance of 1.5 mm or more.
20. A mask according to claim 4, in which the lanes are separated from each other by a distance of 1.5 mm or more.
- 5 21. A mask according to claim 1 or claim 4, in which the dimensions of the lanes and their spacing are such that the reagents held by them between the mask and the analytical support by capillary action do not interact during deposition or distribution onto said analytical support.
22. A mask according to claim 1, in which the lane width is 2.5 mm.
- 10 23. A mask according to claim 1 or claims 4 to 19, in which the length of each lane is in the range 6 to 7 mm.
24. A mask according to claim 1 or claim 4, in which the lane intended for the fixative is offset with respect to the neighbouring first lane by a distance of 5 to 7 mm.
25. A mask according to claim 1 or claim 4, in which the slope of each lane forms an angle in the range 1° to 10° to a horizontal plane.
- 15 26. A mask according to claim 1, in which each lane of the mask has the following dimensions:
  - length: 3 to 15 mm;
  - width: 1 to 10 mm;
  - 20 • inclination of the slope: 1° to 10° to the horizontal.
27. A mask according to claim 1 or claim 4, associated with positioning means intended to hold the mask in the proximity of the surface of the analytical support close to which the mask will be brought for deposition and distribution of reagents on the analytical support.
28. A device for depositing and distributing one or more reagents on an analytical support for
  - 25 biological samples, comprising:
    - a) a mask (10) according to claim 1;

b) means (12, 14, 16) for positioning and guiding the mask allowing the mask to be positioned so that the mask is held in the proximity of the surface of the analytical support and allowing the mask to be guided by sweeping the surface of the analytical support in a horizontal plane parallel to the surface of said support to allow deposition and distribution of the reagents over each of the predetermined zones of the analytical support coming into line with the lanes of the mask.

29. A device for depositing and distributing one or more reagents on an analytical support for biological samples, comprising:

a) a mask (10) according to claim 4;

b) means (12, 14, 16) for positioning and guiding the mask allowing the mask to be positioned so that the mask is held in the proximity of the surface of the analytical support and allowing the mask to be guided by sweeping the surface of the analytical support in an inclined plane with respect to the surface of said support, to allow deposition and distribution of the reagents over each of the predetermined zones of the analytical support coming into line with the lanes of the mask.

30. A device according to claim 28 or claim 29, in which the means for positioning and guiding the mask (10) can establish a distance between the analytical support and the point on the mask that is closest to said support in the range 0.1 mm to 0.5 mm.

31. A device according to claim 28 or claim 29, in which the positioning and guiding means allow automatic displacement of the mask (10) along the analytical support.

32. A method for depositing and distributing one or more reagents on an analytical support comprising biological samples, the method comprising the steps of:

- positioning a mask (10) according to claim 1 in the proximity of the analytical support to deposit the reagent or reagents on the analytical support and hold them

between said support and the slope of the lane or lanes of said mask by capillary action;

- loading the reagent or reagents onto the mask (10) to deposit the reagent or reagents on the analytical support and hold them between said support and the slope or slopes of said mask by capillary action;
- displacing the mask (10) by sweeping the surface of the analytical support to distribute the reagent or reagents on the analytical support in delimited zones of said support (termed incubation zones), the reagent or reagents being distributed in a quantity sufficient to allow their interaction with the constituents of the biological samples present on said analytical support.

33. A method for depositing and distributing one or more reagents on an analytical support comprising biological samples, comprising the steps of:

- loading the reagent or reagents onto a mask (10) to allow the reagent or reagents to be deposited on the analytical support, and being held between said support and the slope or the lane or lanes of said mask by capillary action;
- positioning a mask (10) according to claim 1 in the proximity of the analytical support to deposit the reagent or reagents on the analytical support and hold them between said support and the slope of the lane or lanes of said mask by capillary action;
- displacing the mask by sweeping the surface of the analytical support to distribute the reagent or reagents on the analytical support in delimited zones of said support (termed incubation zones), the reagent or reagents being distributed in a quantity sufficient to allow their interaction with the constituents of the biological samples present on said analytical support.

34. A method according to claim 33, in which the mask is loaded with the reagent or reagents away from the zone of the surface of the analytical support comprising the constituents of the biological samples.
35. A method according to claim 34, in which the mask is loaded with the reagent or reagents prior to the step for positioning the mask in the proximity of the analytical support and in that the reagents are deposited on the analytical support following an impulse resulting from air pressure exerted on the mask, or by a mechanical junction between the reagents and the analytical support, or by projecting the reagents onto the support, or by brief contact between the mask and the analytical support at the lowest point of the slope of the lane.
36. A method according to claim 35, in which loading of the mask (10) with the reagent or reagents and/or displacement of the mask is in an automated manner.
37. A method according to claim 32 or claim 33, in which the analytical support is an electrophoresis support on which the constituents of one or more biological samples have been separated by electrophoretic migration.
38. A method according to claim 37, in which the reagent or reagents are intended to allow immunofixation of the constituents of biological samples separated by electrophoresis.
39. A method for detecting the constituents of one or more biological samples by immunofixation, comprising the steps of:
- carrying out electrophoresis on an electrophoresis support of the biological sample or samples to separate out the constituents;
  - depositing and distributing one or more reagents on an electrophoresis support, using a method according to any one of claims 32 or 33 to 44;
  - incubating the biological samples separated by electrophoresis with the reagent or reagents to allow their immunofixation.
40. A kit comprising:



- at least one mask according to claim 1;
- at least one analytical support.

41. A kit according to claim 40, further comprising:

- reagents for immunofixation of the constituents of samples separated by electrophoresis;
- a fixative for fixing each sample of the assembly of constituents separated by electrophoresis.

42. A mask according to claim 1, in which the reagents are loaded into the mask and are in the freeze dried form.

2022-07-20 14:00:00